

Notice of Allowance was received for the amended claims and a patent issued as No. 6,008,296 on December 28, 1999..

Applicants have filed the subject application to copy all the claims of the '609 patent and the claims 23-58 added in the Preliminary Amendment for the subject application correspond exactly to claims 1-36 of the '609 patent. Further, the original claims 1-22 of the parent application were continued in the subject continuation application as claims 59-78 (now 59-63 and 65-80).

In this Supplemental Amendment, claims 80-115 were added which it is respectfully submitted are directed to the same subject matter and patentable invention as claimed in Irizato et al. U.S. Patent No. 5,736,609 ('609) as defined in 37 CFR 1.601(n). In particular, claim 80 limits the subject matter of claim 23 (copied from Irizato et al. claim 1) to the preferred embodiment in the instant application.

I. The following is the basis upon which a Declaration of Interference Under 37 CFR § 1.607 is sought.

For clarity, the following correspondence between newly added claims 80-115 of the subject application and claims of the '609 patent are presented as follows:

CLAIMS OF SUBJECT APPLICATION	CLAIMS OF U.S. PATENT NO. 5,736,609
Claim 80	Claim 1
Claim 81	Claim 2
Claim 82	Claim 3
Claim 83	Claim 4
Claim 84	Claim 5
Claim 85	Claim 6

CLAIMS OF SUBJECT APPLICATION

CLAIMS OF
U.S. PATENT NO. 5,736,609

Claim 86

Claim 7

Claim 87

Claim 8

Claim 88

Claim 9

Claim 89

Claim 10

Claim 90

Claim 11

Claim 91

Claim 12

Claim 92

Claim 13

Claim 93

Claim 14

Claim 94

Claim 15

Claim 95

Claim 16

Claim 96

Claim 17

Claim 97

Claim 18

Claim 98

Claim 19

Claim 99

Claim 20

Claim 100

Claim 21

Claim 101

Claim 22

Claim 102

Claim 23

Claim 103

Claim 24

Claim 104

Claim 25

Claim 105

Claim 26

Claim 106

Claim 27

Claim 107

Claim 28

Claim 108

Claim 29

Claim 109

Claim 30

CLAIMS OF SUBJECT APPLICATION	CLAIMS OF U.S. PATENT NO. 5,736,609
Claim 110	Claim 31
Claim 111	Claim 32
Claim 112	Claim 33
Claim 113	Claim 34
Claim 114	Claim 35
Claim 115	Claim 36

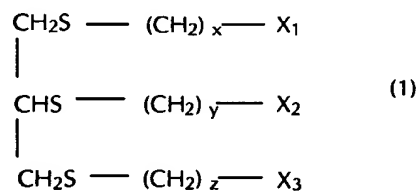
II. Identification Of Patent With Which Interference Is Sought

Applicants request declaration of an interference between the subject application and Irizato et al. U.S. Patent No. 5,736,609 filed as application no. 663,734 on June 14, 1996, issued April 7, 1998 and assigned to Mitsui Toatsu Chemicals, Inc.

III. Proposed Count

Applicants request declaration of an interference on the basis of the following proposed count, which corresponds exactly to a defined species of claim 1 of the Irizato et al. patent:

A sulfur-containing urethane resin composition which comprises a polythiol compound represented by formula (1):

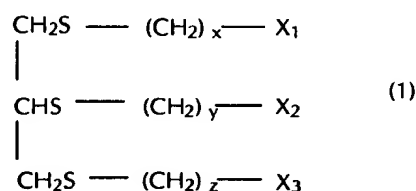


wherein X_1 , X_2 and X_3 each is a hydrogen atom or a mercapto group;
 x , y and z each is an integer of 0 to 8; and in their combinations, formula (1)
 has at least two mercapto groups;

a polyiso(thio)cyanate compound, and a compound having two or more reactive
 unsaturated groups and neither a hydroxyl group nor a mercapto group in an
 amount of 30 to 70% by weight based on the total weight of the
 composition.

or

A sulfur-containing urethane resin composition which comprises a polythiol
 compound represented by formula (1):



wherein X_1 , X_2 and X_3 each is a hydrogen atom; and x , y and z each is 0; a
 polyiso(thio)cyanate compound, and a compound having two or more
 reactive unsaturated groups and neither a hydroxyl group nor a mercapto
 group in an amount of 30 to 70% by weight based on the total weight of the
 composition.

IV. Identification Of Claims In Patent Corresponding To Proposed Count

Applicants believe that claims 1-36 of the Irizato et al. patent and claims 80-115 of the subject application correspond to the proposed count and that both define the same subject matter and patentable invention under 37 CFR 1.601 (n).

V. Identification Of Claims In Application Corresponding To Proposed Account

Applicants believe that claims 80-115 of the subject application correspond to the proposed count.

VI. Application Of The Terms Of The Claims To Disclosure Of The Subject Application

The terms of the claims of the subject application identified as corresponding to the proposed account may be applied to disclosure of the subject application as follows:

CLAIM TERMS	DISCLOSURE IN APPLICATION
<p>Claim 80 - A sulfur-containing urethane resin composition which comprises</p>	<p>Title: Optical Terpolymer of Polyisocyanate, Polythiol and Polyene Monomers.</p>
<p>a polythiol compound represented by the formula:</p> $ \begin{array}{c} \text{CH}_2\text{S} - (\text{CH}_2)_x - \text{X}_1 \\ \\ \text{CHS} - (\text{CH}_2)_y - \text{X}_2 \\ \\ \text{CH}_2\text{S} - (\text{CH}_2)_z - \text{X}_3 \end{array} $ <p>wherein X_1, X_2 and X_3 each is a hydrogen atom; and x, y and z each is 0;</p>	<p>Page 5, lines 14-15: "A preferred polymer is made by the reaction of a polyacrylate, a polyisocyanate monomer and a polythiol monomer.</p> <p>Page 9, line 23: 1,2,3-propanetrithiol.</p> <p>Page 5, lines 14-15: "A preferred polymer is made by the reaction of a polyacrylate, a polyisocyanate monomer and a polythiol monomer.</p>
<p>a polyiso(thio)cyanate compound,</p>	<p>Page 5, lines 6-7: a polyisocyanate or polyisothiocyanate monomer or a polyisocyanate monomer containing at least one isothiocyanate group.</p> <p>Page 5, lines 10-13: For convenience, the term polyisocyanate will be meant to include polyisocyanate, polyisothiocyanate, and polyisocyanate monomers containing at least one isothiocyanate group, or mixtures thereof.</p>

CLAIM TERMS	DISCLOSURE IN APPLICATION
<p>and a compound having two or more reactive unsaturated groups and neither a hydroxyl group nor a mercapto group in an amount of 30 to 70% by weight based on the total weight of the composition.</p>	<p>Page 8, lines 6-7: 1,6-hexane-diacrylate or -dimethacrylate.</p> <p>Page 16, line 28: 2. PETA for pentaerythritol tetraacrylate.</p> <p>Page 11, lines 6-12: The monomers may be used in widely varying amounts depending on the resin properties and optic product properties desired. In general, the curable composition comprises, by weight, polyisocyanate monomer in an amount of about 2 to 70%, preferably 10 to 30%; polyene monomer in an amount of about 5 to 70%, preferably 10 to 40%; and an active hydrogen containing monomer in an amount of about 10 to 60%, preferably 20 to 50%. Higher or lower amounts may be employed for certain applications.</p>
<p>Claim 81 - The sulfur-containing urethane resin composition according to claim 80 wherein the amount of the compound having two or more reactive unsaturated groups is in the range of 30 to 50% by weight based on the total weight.</p>	<p>Page 11, lines 6-12: The monomers may be used in widely varying amounts depending on the resin properties and optic product properties desired. In general, the curable composition comprises, by weight, polyisocyanate monomer in an amount of about 2 to 70%, preferably 10 to 30%; polyene monomer in an amount of about 5 to 70%, preferably 10 to 40%; and an active hydrogen containing monomer in an amount of about 10 to 60%, preferably 20 to 50%. Higher or lower amounts may be employed for certain applications.</p>
<p>Claim 82 - The sulfur-containing urethane-based resin composition according to claim 80 which contains another polythiol compound or a thiol compound having a hydroxyl group in addition to the polythiol of the formula.</p>	<p>Page 11, lines 4-5: The active hydrogen containing compounds may be used singly or in combination as a mixture.</p>

CLAIM TERMS	DISCLOSURE IN APPLICATION
<p>Claim 83 - The sulfur-containing urethane resin composition according to claim 82 wherein the polyiso(thio)cyanate compound, the compound having the reactive unsaturated groups, the polythiol of the formula, and the other polythiol compound or the thiol compound having the hydroxyl group is such that a functional group molar ratio of {the iso(thio)cyanate group + the reactive unsaturated group} / {the mercapto group + the hydroxyl group} is in the range of 1.0 to 3.0.</p> <p>Claim 84 - A sulfur-containing urethane resin composition which comprises</p>	<p>Page 11, line 13-20: The proportions of the monomers may likewise range widely depending on the polymer properties desired. In general, the ratio of the NCO/NCS groups to the active hydrogen containing groups is about 0.05 to 0.9 preferably 0.2 to 0.8. The ratio of vinyl groups to active hydrogen containing groups is about 0.1 to 0.95, preferably 0.2 to 0.7. The ratio of NCO or NCS groups and vinyl groups to -SH group (-NCO or NCS + vinyl)/-SH is preferably in the range of 1.05 to 2.0. This ratio will ensure reduction of free-SH groups in the end product. Therefore it will enhance weathering stability of the end product.</p> <p>Title: Optical Terpolymer of Polyisocyanate, Polythiol and Polyene Monomers.</p> <p>Page 5, lines 14-15: "A preferred polymer is made by the reaction of a polyacrylate, a polyisocyanate monomer and a polythiol monomer.</p>
<p>a polythiol compound represented by the formula:</p> $ \begin{array}{c} \text{CH}_2\text{S} \text{ --- } (\text{CH}_2)_x \text{ --- } \text{X}_1 \\ \\ \text{CHS} \text{ --- } (\text{CH}_2)_y \text{ --- } \text{X}_2 \\ \\ \text{CH}_2\text{S} \text{ --- } (\text{CH}_2)_z \text{ --- } \text{X}_3 \end{array} $ <p>wherein X_1, X_2 and X_3 each is a hydrogen atom; and x, y and z each is 0;</p> <p>a polyiso(thio)cyanate compound,</p>	<p>Page 9, line 23: 1,2,3-propanetrithiol.</p> <p>Page 5, lines 14-15: "A preferred polymer is made by the reaction of a polyacrylate, a polyisocyanate monomer and a polythiol monomer.</p> <p>Page 5, lines 6-7: a polyisocyanate or polyisothiocyanate monomer or a polyisocyanate monomer containing at least one isothiocyanate group.</p> <p>Page 5, lines 10-13: For convenience, the term polyisocyanate will be meant to include polyisocyanate, polyisothiocyanate, and polyisocyanate monomers containing at least one isothiocyanate group, or mixtures thereof.</p>

CLAIM TERMS

DISCLOSURE IN APPLICATION

and a compound having two or more reactive unsaturated groups and neither a hydroxyl group nor a mercapto group in an amount of 10 to 70% by weight based on the total weight of the composition,

Page 8, lines 6-7: 1,6-hexane-diacrylate or -dimethacrylate.

Page 16, line 28: 2. PETA for pentaerythritol tetraacrylate.

Page 11, lines 6-12: The monomers may be used in widely varying amounts depending on the resin properties and optic product properties desired. In general, the curable composition comprises, by weight, polyisocyanate monomer in an amount of about 2 to 70%, preferably 10 to 30%; polyene monomer in an amount of about 5 to 70%, preferably 10 to 40%; and an active hydrogen containing monomer in an amount of about 10 to 60%, preferably 20 to 50%. Higher or lower amounts may be employed for certain applications.

and a photopolymerization catalyst.

Pages 11-16, lines 35-36 and 1-2: The monomer composition to be subjected to a polymerization reaction can also contain conventional additives such as an antistatic agent, a heat stabilizer, an ultraviolet absorbent, an antioxidant, dyes and/or one of more other auxiliary additives in accordance with the intended end use of the terpolymer to be formed.

Page 13, lines 3-6: The monomer mixture for casting or polymerization may be mixed together with additives such as a lubricant, a mold releasing agent, polymerization initiator, catalyst, etc. preferably under non-reacting conditions, degassed and reacted using conventional techniques known in the art.

CLAIM TERMS

DISCLOSURE IN APPLICATION

Claim 85 - The sulfur-containing urethane resin composition according to claim 84 wherein the amount of the compound having two or more reactive unsaturated groups is in the range of 30 to 50% weight based on the total weight.

Page 11, lines 6-12: The monomers may be used in widely varying amounts depending on the resin properties and optic product properties desired. In general, the curable composition comprises, by weight, polyisocyanate monomer in an amount of about 2 to 70%, preferably 10 to 30%; polyene monomer in an amount of about 5 to 70%, preferably 10 to 40%; and an active hydrogen containing monomer in an amount of about 10 to 60%, preferably 20 to 50%. Higher or lower amounts may be employed for certain applications.

Claim 86 - The sulfur-containing urethane resin composition according to claim 84 which contains another polythiol compound or a thiol compound having a hydroxyl group in addition to the polythiol of the formula.

Page 11, lines 4-5: The active hydrogen containing compounds may be used singly or in combination as a mixture.

Claim 87 - The sulfur-containing urethane resin composition according to claim 86 wherein the polyiso(thio)cyanate compound, the compound having the reactive unsaturated groups, the polythiol of the formula and the other polythiol compound or the thiol compound having the hydroxyl group is such that a functional group molar ratio of {the iso(thio)cyanate group + the reactive unsaturated group} / {the mercapto group + the hydroxyl group} is in the range of 1.0 to 3.0.

Page 11, line 13-20: The proportions of the monomers may likewise range widely depending on the polymer properties desired. In general, the ratio of the NCO/NCS groups to the active hydrogen containing groups is about 0.05 to 0.9 preferably 0.2 to 0.8. The ratio of vinyl groups to active hydrogen containing groups is about 0.1 to 0.95, preferably 0.2 to 0.7. The ratio of NCO or NCS groups and vinyl groups to -SH group (-NCO or NCS + vinyl)/-SH is preferably in the range of 1.05 to 2.0. This ratio will ensure reduction of free-SH groups in the end product. Therefore it will enhance weathering stability of the end product.

CLAIM TERMS	DISCLOSURE IN APPLICATION
<p>Claim 88 - A sulfur-containing urethane resin obtained by polymerizing the composition of claim 80.</p>	<p>Page 5, lines 32-35: The mixture is kept cool, e.g., at a temperature below about 15°C for up to 72 hours, preferably 10 to 32 hours and is then cast (cured) at an elevated temperature to produce the optical resin of the invention. A preferred curing process is also disclosed.</p> <p>Page 6, lines 1-5: In another aspect of the invention, the optical resin products may be prepared by casting or other mold type polymerization process to produce a cross-linked resin optical product. The resin can also be formed as a linear thermoplastic polymer which polymer can then be injection molded or compression molded into optical and other products at high production rates.</p> <p>Page 11, lines 21-22: The optical resins and products of this invention may be produced by casting polymerization.</p> <p>Page 16, Examples 1-4.</p>
<p>Claim 89 - A sulfur-containing urethane resin obtained by polymerizing the composition of claim 81.</p> <p>Claim 90 - A sulfur-containing urethane resin obtained by polymerizing the composition of claim 82.</p> <p>Claim 91 - A sulfur-containing urethane resin obtained by polymerizing the composition of claim 83.</p> <p>Claim 92 - A sulfur-containing urethane resin obtained by polymerizing the composition of claim 84.</p> <p>Claim 93 - A sulfur-containing urethane resin obtained by polymerizing the composition of claim 85.</p> <p>Claim 94 - A sulfur-containing urethane resin obtained by polymerizing the composition of claim 86.</p>	<p>Same as for claim 88.</p> <p>Same as for claim 88.</p> <p>Same as for claim 88.</p> <p>Same as for claim 88.</p> <p>Same as for claim 88.</p> <p>Same as for claim 88.</p>

CLAIM TERMS	DISCLOSURE IN APPLICATION
<p>Claim 95 - A sulfur-containing urethane resin obtained by polymerizing the composition of claim 87.</p> <p>Claim 96 - An optical element which comprises the resin of claim 88.</p>	<p>Same as for claim 88.</p> <p>Pages 4-5, lines 33-36 and 1-6: In this invention, it has been discovered that reacting effective amounts of polythiols with both polyenes, preferably with three (3) or higher number of vinyl groups in the monomers, and polyisocyanates results in a new class of terpolymers which are homogeneous systems without any significant phase separation and have enhanced properties for optical applications such as eyeglasses. Among these properties are balanced high refractive index and high Abbe number, enhanced weathering stability and good impact resistance. The subject of this invention are optical resins having a combination of high refractive index and high Abbe number produced from curable or thermoplastic monomer compositions.</p>
<p>Claim 97 - An optical element which comprises the resin of claim 89.</p> <p>Claim 98 - An optical element which comprises the resin of claim 90.</p> <p>Claim 99 - An optical element which comprises the resin of claim 91.</p> <p>Claim 100 - An optical element which comprises the resin of claim 92.</p>	<p>Page 5, lines 21-24: In another aspect of the invention, a process is provided for preparing optical resin products with enhanced optical and physical properties from the composition comprising a polyene monomer, polyisocyanate monomer and active hydrogen groups containing monomer.</p> <p>Pages 16-18, Examples 1-5.</p> <p>Same as for claim 96.</p> <p>Same as for claim 96.</p> <p>Same as for claim 96.</p> <p>Same as for claim 96.</p>

CLAIM TERMS	DISCLOSURE IN APPLICATION
Claim 101 - An optical element which comprises the resin of claim 93.	Same as for claim 96.
Claim 102 - An optical element which comprises the resin of claim 94.	Same as for claim 96.
Claim 103 - An optical element which comprises the resin of claim 95.	Same as for claim 96.
Claim 104 - A lens which comprises the optical element of claim 96.	Same as for claim 96.
Claim 105 - A lens which comprises the optical element of claim 97.	Same as for claim 96.
Claim 106 - A lens which comprises the optical element of claim 98.	Same as for claim 96.
Claim 107 - A lens which comprises the optical element of claim 99.	Same as for claim 96.
Claim 108 - A lens which comprises the optical element of claim 100.	Same as for claim 96.
Claim 109 - A lens which comprises the optical element of claim 101.	Same as for claim 96.
Claim 110 - A lens which comprises the optical element of claim 102.	Same as for claim 96
Claim 111 - A lens which comprises the optical element of claim 103	Same as for claim 96
Claim 112 - A process for preparing a sulfur-containing urethane resin which comprises	Pages 4-5, lines -36 and 1: In this invention, it has been discovered that reacting effective amounts of polythiols with both polyenes, preferably with three (3) or higher number of vinyl groups in the monomers, and polyisocyanates results in a new class of terpolymers which are homogeneous systems without any significant phase separation and have enhanced properties for optical applications such as eyeglasses.

CLAIM TERMS	DISCLOSURE IN APPLICATION
a step of curing by irradiating UV rays or visible rays	Pages 11-12, lines 35-36 and 1-2: The monomer composition to be subjected to a polymerization reaction can also contain conventional additives such as an antistatic agent, a heat stabilizer, an ultraviolet absorbent, an antioxidant, dyes and/or one of more other auxiliary additives in accordance with the intended end use of the terpolymer to be formed.
a sulfur-containing urethane resin composition comprising	<p>Title: Optical Terpolymer of Polyisocyanate, Polythiol and Polyene Monomers.</p> <p>Page 5, lines 14-15 "A preferred polymer is made by the reaction of a polyacrylate, a polyisocyanate monomer and a polythiol monomer.</p>
<p>a polythiol compound represented by the formula:</p> $ \begin{array}{c} \text{CH}_2\text{S} \text{ --- } (\text{CH}_2)_x \text{ --- } \text{X}_1 \\ \\ \text{CHS} \text{ --- } (\text{CH}_2)_y \text{ --- } \text{X}_2 \\ \\ \text{CH}_2\text{S} \text{ --- } (\text{CH}_2)_z \text{ --- } \text{X}_3 \end{array} $ <p>wherein X_1, X_2 and X_3 each is a hydrogen atom; and x, y and z each is 0;</p>	<p>Page 9, line 23: 1,2,3-propanetrithiol.</p> <p>Page 5, lines 14-15 "A preferred polymer is made by the reaction of a polyacrylate, a polyisocyanate monomer and a polythiol monomer.</p>
a polyiso(thio)cyanate compound,	<p>Page 5, lines 6-7: a polyisocyanate or polyisothiocyanate monomer or a polyisocyanate monomer containing at least one isothiocyanate group.</p> <p>Page 5, lines 10-13: For convenience, the term polyisocyanate will be meant to include polyisocyanate, polyisothiocyanate, and polyisocyanate monomers containing at least one isothiocyanate group, or mixtures thereof.</p>

CLAIM TERMS	DISCLOSURE IN APPLICATION
<p>and a compound having two or more reactive unsaturated groups and neither a hydroxyl group nor a mercapto group in an amount of 10 to 70% by weight based on the total weight of the composition.</p>	<p>Page 8, lines 6-7: 1,6-hexane-diacrylate or -dimethacrylate.</p> <p>Page 16, line 28: 2. PETA for pentaerythritol tetraacrylate.</p> <p>Page 11, lines 6-12: The monomers may be used in widely varying amounts depending on the resin properties and optic product properties desired. In general, the curable composition comprises, by weight, polyisocyanate monomer in an amount of about 2 to 70%, preferably 10 to 30%; polyene monomer in an amount of about 5 to 70%, preferably 10 to 40%; and an active hydrogen containing monomer in an amount of about 10 to 60%, preferably 20 to 50%. Higher or lower amounts may be employed for certain applications.</p>
<p>Claim 113 - A sulfur-containing resin which is obtained by the process of claim 112.</p>	<p>Pages 11 and 12, lines 35-36 and 1-2: The monomer composition to be subjected to a polymerization reaction can also contain conventional additives such as an antistatic agent, a heat stabilizer, an ultraviolet absorbent, an antioxidant, dyes and/or one of more other auxiliary additives in accordance with the intended end use of the terpolymer to be formed.</p>
<p>Claim 114 - An optical element which comprises the resin of claim 113.</p>	<p>Page 11, lines 21-25: The optical resins and products of this invention may be produced by casting polymerization. Any one of molds and frames of various shapes designed in accordance with individual end uses, such as plate-like, lens-like, cylinder-like, prismatic, conical, aspherical, progressive, bifocal and spherical shapes may be used as a casting polymerization vessel.</p>

CLAIM TERMS**DISCLOSURE IN APPLICATION**

Claim 115 - A lens which comprises the optical element of claim 114.

Page 11, lines 21-25: The optical resins and products of this invention may be produced by casting polymerization. Any one of molds and frames of various shapes designed in accordance with individual end uses, such as plate-like, lens-like, cylinder-like, prismatic, conical, aspherical, progressive, bifocal and spherical shapes may be used as a casting polymerization vessel.

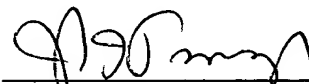
VII. Basis For Judgment Of Priority

The subject application is a continuation of U.S. Serial No. 08/425,958 filed April 19, 1995, now U.S. Patent No. 6,008,296 issued on December 28, 1999. The effective filing date of the subject application is therefore April 19, 1995 based on the subject matter disclosed in U.S. Serial No. 08/425,958.

The basis for judgment of priority relative to the Irizato et al. patent is that the effective filing date of April 19, 1995 of the subject application is prior to the effective filing date of June 14, 1996 of the Irizato et al. patent.

Accordingly, Applicants respectfully request declaration of an interference with Irizato et al. U.S. Patent No. 5,736,609 and/or allowance of claims 59-63 and 65-79.

Respectfully submitted,



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CERTIFICATE OF MAILING

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